



34

0754

2017
Liles

United States Department of the Interior

BUREAU OF MINES

COAL MINE HEALTH AND SAFETY DISTRICT 3

RICHLANDS, VIRGINIA 24641

COAL NONFATAL

REPORT OF COAL-MINE BUMP

BEATRICE MINE
BEATRICE POCAHONTAS COMPANY
KEEN MOUNTAIN, BUCHANAN COUNTY, VIRGINIA

January 26, 1973

by

Elmer Simmons
Mining Engineer

and

Wayland M. Jessee
Federal Coal-Mine Inspector

Originating Office - Bureau of Mines
Richlands, Virginia 24641
M. L. West, Subdistrict Manager
Coal Mine Health and Safety, Richlands, Virginia Subdistrict

REPORT OF COAL-MINE BUMP

BEATRICE MINE
BEATRICE POCAHONTAS COMPANY
KEEN MOUNTAIN, BUCHANAN COUNTY, VIRGINIA

January 26, 1973

by

Elmer Simmons
Mining Engineer

and

Wayland M. Jessee
Federal Coal-Mine Inspector

INTRODUCTION

This report is based on an investigation made pursuant to the provisions of the Federal Coal Mine Health and Safety Act of 1969 (83 Stat. 742).

A coal bump or outburst occurred at approximately 11 p.m., Friday, January 26, 1973, in the tail-entry of the No. 2 plow section of the Beatrice Mine.

The No. 2 plow face, (the third longwall panel in this area), located between the Nos. 4 and 5 development panels off 1 south off 4 west, was 450 feet by 3,100 feet of which approximately 1,730 feet had been mined. Thirteen men were working in the longwall area and one hundred men in other areas of the mine at the time of the occurrence. There was no injury to personnel and property damage, estimated to be \$1,500, was confined to the plow tailpiece.

The Subdistrict Manager of the Richlands, Virginia, Bureau of Mines Office was notified of the occurrence by Carnie Browning, Safety Inspector, at approximately 8 a.m., Monday, January 29, 1973. The investigation was made on Tuesday, January 30, 1973.

GENERAL INFORMATION

The Beatrice Mine is served by the Norfolk and Western Railway. The mine is opened by four circular concrete-lined shafts, which intersect the Pocahontas No. 3

coalbed at an average depth of 1,345 feet. The coalbed averages 60-inches in thickness locally. Of the 508 men employed, 452 worked underground on three coal-producing shifts a day, five and six days a week, and produced a daily average of 4,800 tons of coal, mechanically loaded. All coal was transported from the working sections on flame resistant belt conveyors to centralized loading points, then transferred to track-mounted mine cars for transportation by trolley locomotives to the skip shaft.

Mining consisted of developing main, cross, and panel entries with continuous mining machines. Panel entries were being developed for longwall mining. Main and cross entries were driven in sets of 4 to 8 on 100-foot centers with crosscuts on 100-foot centers. Longwall panel entries were developed in sets of 4 to provide entries for two intake and two return airways--utilizing such airways to provide two splits of air for dust control and to dilute methane liberated during development. Entries were driven on 50 and 100-foot centers and crosscuts were on 100-foot centers. Immediately adjacent to the longwall rib on the tail entry side, pillars 80 feet by 80 feet were left to afford greater tail entry protection from increased over-burden weight created by the gob area of the previous longwall panel(s). Pillars nearest the gob on the tail entry side were 30 feet by 80 feet (See Sketch).

Generally, the immediate roof is a combination of thin, fragile shale, sandstone and coal streak laminations. The coal is friable and the floor is susceptible to heaving. However, in the area of the occurrence, the immediate roof was sandstone interspersed with sandy shale and the floor was a dense sandy shale of an undetermined thickness which resisted heaving.

Roof bolts were used as a principle means of roof support and were supplemented with cribs, posts, and crossbars where needed. Roof support for the longwall face, which was 450 feet in length, was provided with 94 hydraulic powered, self-advancing support units, each consisting of four 140-ton capacity hydraulically set legs with articulated canopy.

Information for this report was obtained from eyewitnesses, Leonard M. Miller, Tail Operator; George Shortridge, Assistant Plow Foreman; other employees and company officials and from an investigation at the scene of the occurrence.

A Federal inspection was in progress at the time of the occurrence.

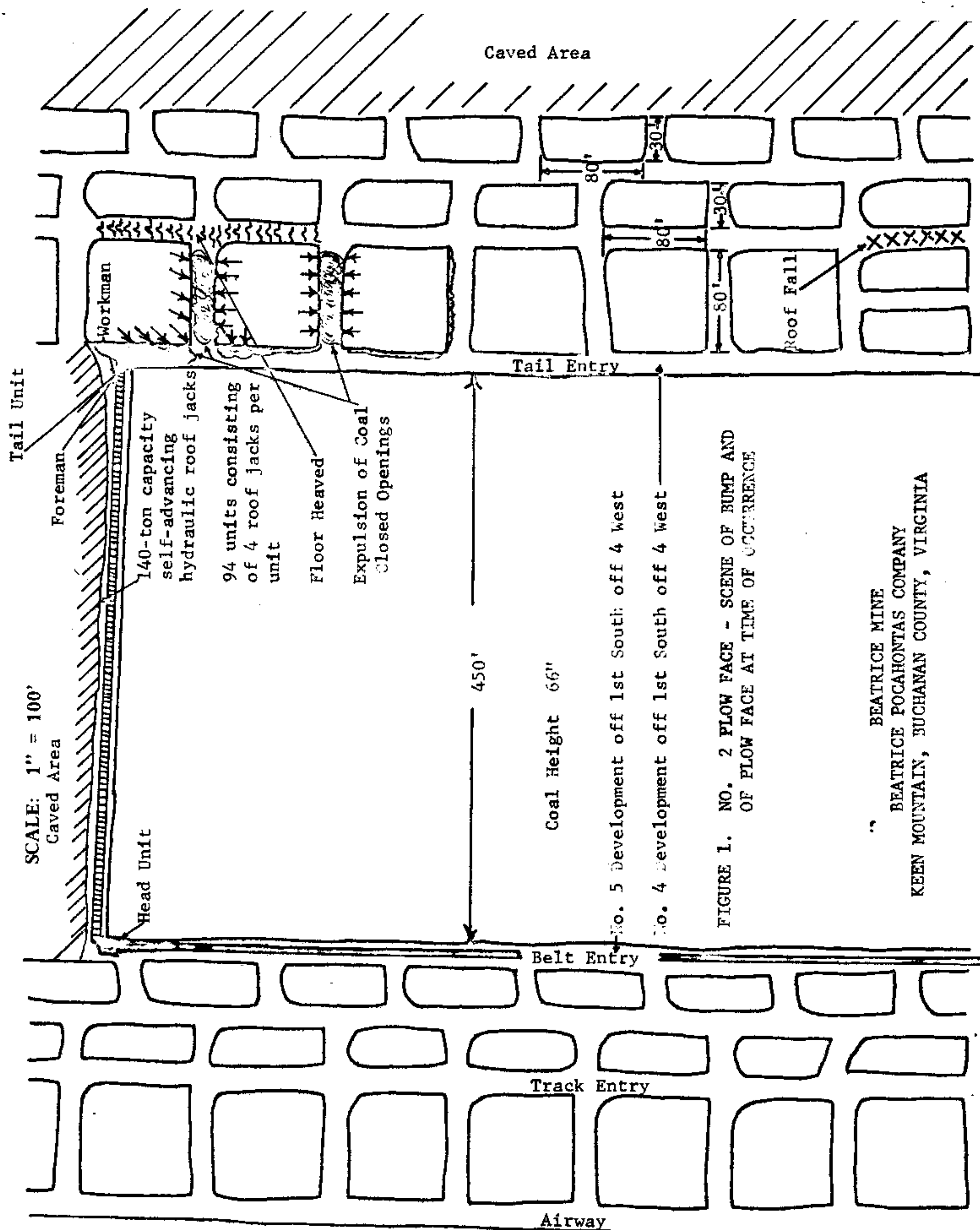


FIGURE 1. NO. 2 FLOW FACE - SCENE OF BUMP AND OF FLOW FACE AT TIME OF OCCURRENCE

DESCRIPTION OF OCCURRENCE

On Friday, January 26, 1973, the second shift No. 2 plow crew left the surface at 3:40 p.m. and arrived on the section at 4:25 p.m. Coal production was begun at 4:32 p.m. and proceeded normally until 10:30 p.m., at which time production ceased. The crew, except for Leonard M. Miller, Tail Operator, and George Shortridge, Assistant Plow Foreman, proceeded to the plow head. Repair parts for the hydraulic roof jacks were being placed on the face conveyor for distribution along the jack line. Miller and Shortridge, who had remained at the plow tail to notify the plow operator by telephone when to stop the face conveyor as the repair parts were being distributed, were having a conversation while waiting for the face conveyor to be reversed when at approximately 11 p.m., the bump occurred. Miller and Shortridge were knocked down by the concussion, but recovered and walked across the plow face to the head entry. In the meantime, the plow foreman had accounted for the remainder of the crew. Electric power was cut off, normal ventilation was reestablished and a thorough examination of the plow face and surrounding areas was made.

Reportedly, for approximately 20 minutes prior to the bump, everything was unusually quiet. Three of the tail-entry chain pillars adjacent to and extending from 35 feet inby to 245 feet outby the conveyor tail drive unit were affected. Coal was expelled violently from the three pillars; the entry between the pillar nearest the conveyor tail drive unit, and the longwall rib was completely filled with loose coal. The two crosscuts between the three pillars were also filled with loose coal (See Sketch). Pronounced floor heaves occurred in the two entries (No. 2 and 3 entries of No. 4 development panel) to the right of and adjacent to the three pillars.

Reportedly, there were no apparent roof stresses or movement following the bump. Dense clouds of dust were thrown into suspension. Two check curtains in the two entries on the head drive and one check curtain on the tail entry side of the plow face were dislodged, but they were repaired and normal ventilation was restored immediately.

CAUSE OF OCCURRENCE

The following natural conditions conducive to bumps were the cause of the occurrence:

1. The floor in the bump area was a dense sandy shale of undetermined thickness that resisted heaving.

2. The immediate roof in the bump area was sandstone interspersed with sandy shale up to 20 feet thick. Above this stratum were massive sandstone beds, 20 feet to 30 feet in thickness, separated by thin shale layers generally less than 3 feet in thickness.
3. A dense overburden thickness in the bump area of 2,485 feet.
4. The ability of the coal to store up large amounts of strain energy while under compression and constraint.
5. The coal became overstressed and its stored energy was released with sudden violence causing the coal burst or bump.

REQUIREMENTS

During development of longwall access entries, management shall keep a record of the floor and roof structures and when roof and floor conditions are encountered, that may be conducive to coal outbursts, the Bureau of Mines shall be notified prior to longwall mining in the area so that predetermined pillars can be instrumented and the build-up of roof stresses evaluated so as to foretell the possibility of coal outbursts.

Respectfully submitted,

/s/ Elmer Simmons

Elmer Simmons
Mining Engineer

/s/ Wayland M. Jessee

Wayland M. Jessee
Federal Coal-Mine Inspector

Approved by:



W. R. Compton, District Manager